

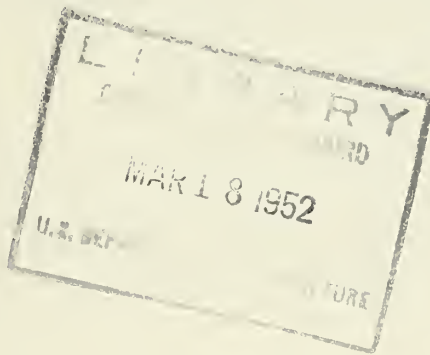
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MARKETING ACTIVITIES



U.S. DEPARTMENT OF AGRICULTURE
Production and Marketing Administration
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FRESHER CORN FOR CITY TABLES

By B. F. Hartline Page 3

Getting high quality fresh sweet corn to city consumers always has been a problem. By combining and adapting precooling and icing methods, the Illinois Division of Markets last year developed an improved method of handling. Mr. Hartline, Marketing Specialist, with the Division, was right "on top" of the project.

CHANGES IN MILK PRODUCTION AND USE

By Don S. Anderson Page 9

A lot of changes are occurring in the Nation's dairy industry. Mr. Anderson, Deputy Director, PMA's Dairy Branch, discusses trends over the past decade or so and some of the problems brought about.

HANDLING COSTS IN APPLE STORAGE

By Joseph F. Herrick Page 13

Some apple handling methods now used in the Pacific Northwest are more costly than others. Mr. Herrick is an agricultural economist with PMA's Marketing and Facilities Research Branch.

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Fresher Corn for City Tables

By B. F. Hartline

There is an old saying among farm people that to enjoy the full flavor of a "roastin' ear" you should have your water boiling before the corn is picked. Like most observations of people close to the soil, this one has considerably more than an element of truth.

Sweet corn is one of the most perishable of fresh vegetables. Under normal handling conditions, without ice or other refrigeration, sweet corn loses 60 percent of its sugar content within 24 hours of harvesting. The sugar turns to starch, and this conversion begins as soon as the corn is removed from the stalk. The process is speeded up by internal heating which often raises the cob temperature of the corn as much as 25 to 30 degrees Fahrenheit.

Problem Not New

Since the total sugar content of sweet corn averages only about 6 percent at milk stage, it is obvious that the retail consumer normally receives fresh sweet corn which has very little resemblance to that enjoyed by the grower at his own dinner table. This resemblance naturally lessens as the time increases between harvest of the corn and use by the consumer.

The problem of providing better quality sweet corn for retail consumers has been tackled in a number of ways in the past by various groups throughout the country. While almost every effort helped somewhat in improving retail quality of sweet corn, each had some defects.

Another effort to lick this problem was begun last year by the Division of Markets, Illinois Department of Agriculture, through a project partially financed under the Research and Marketing Act of 1946. It will be continued this year with further RMA assistance.

Although the work done last year was too limited to determine the actual increase in sales that might result from furnishing city consumers with the closest thing possible to "field fresh" corn, it did prove that, through precooling and package-icing, sugar losses can be cut to less than 5 percent in 24 hours and to about 15 percent in as long as 72 hours of handling. It showed, too, that there is a definite demand for pre-cooled and package-iced sweet corn which can be expected to increase as the consuming public becomes aware of the product.

Furthermore, the work done under the direction of the Illinois Division of Markets demonstrated again the kind of cooperation that is possible among all segments of agricultural marketing. In addition to the farmers in the Anna and West Frankfort areas of Southern Illinois who participated in the 1951 project, assistance was given by Southern Illinois University, a chain store council and two food chains, ice associations and two ice companies, a railroad company, a county Farm Bureau, a local Chamber of Commerce, a chemical company, an implement company, a paper bag corporation, and a local radio station.

In developing the project, previous experience in the handling of sweet corn to maintain its freshness was examined critically. For instance, it has been known for a long time that refrigeration slows down the sugar conversion processes in sweet corn. Some of the data on this subject extends as far back as 1919. Corn kept close to freezing, 32 degrees Fahrenheit, loses its sugars at the rate of 3.5 percent in the first 24 hours, 10.3 percent in 48 hours, and 15.3 percent in 72 hours after harvest.

While this ideal 32 degree temperature is not economically feasible in the handling of fresh sweet corn, temperatures of 45-50 degrees Fahrenheit are. This temperature range has been found to be satisfactory for putting a flavorful product on the market. Another factor taken into consideration in the project is the loss of moisture content of sweet corn when it is not iced or some other method increasing humidity while in transit from grower to consumer is not used.

Earlier Efforts to Improve Quality

Among the methods of handling sweet corn which have been tried in an effort to improve quality at the consumer level are: 1. Early morning harvest and delivery direct to the retail store; 2. same as 1 except that the corn was immersed in well or cistern water; 3. corn bagged in mesh bags and layer iced on the truck; 4. corn packed in crates or baskets with one or two layers of cracked ice in each crate or basket; 5. corn hydro-cooled by immersion in ice water either in bulk or in crates or mesh bags; 6. same as 5 except that corn was layer iced in the crates or baskets before delivery to the wholesaler or retailer.

In Illinois, projects have been conducted for 3 years in the Chicago and St. Louis areas using method 3 above. All these methods showed some improvement in the quality of the end product and some showed excellent results. There seems to be no record of a complete failure in any of the projects, and they have usually resulted in increased acreage and greater demand on the part of the consumer.

Defects have been found in most of these methods, however. For instance, layer icing on the truck or in the package alone takes considerable time to bring the produce temperature down to a desirable level and allows the sugar conversion process to make headway. Hydro-cooling alone brings temperatures down rapidly, but the corn heats up again in transit. All of the methods have been of necessity restricted to local markets because of the difficulty of maintaining low temperatures over

long hauls. This means that to serve a large metropolitan area, the grower must be in high-production-cost localities and in the small town areas the volume is limited. If the corn goes through a warehouse or wholesaler much of the refrigerant is lost in handling at this terminal. To achieve best results with crates or baskets, it has been found that they must have a paper liner to retain the cold.

Combination of Methods Sought

Aware of the advantages and disadvantages of these methods of handling which have been tried before, the Illinois researchers felt that a combination of methods could be worked out that would give the desired results.

Briefly, the process worked out was to gather the corn early as possible in the morning while the temperature was comparatively low and the sugar content high, hydro-cool it by immersion in ice water for a sufficiently long time to bring the temperature down to near 40°F., package or layer ice it in wet strength paper bags, and deliver it immediately to refrigeration at a central warehouse for later distribution to retail outlets. It was also decided to experiment with long-haul deliveries on a trial basis.

Two chain store systems agreed to cooperate in the project, pay a premium for the corn, and give it a follow-up in their retail outlets. One of the chains had outlets in Illinois, Kentucky, and Missouri. The other agreed to handle a few shipments in Chicago to test carrying qualities of the treated corn.

In the spring of 1951, the two groups of growers in the Anna and West Frankfort areas were organized. Each participant was urged to put in a small acreage of either Gold Rush or Golden Cross Bantam since yellow corn is preferred by the trade. It was agreed that the best quality corn possible was to be produced and only that meeting requirements of US #1 grade would be marketed. Plantings were scheduled to provide a continuous supply during the growing season and a crew was organized from high school students to go from grower to grower to insure an efficient and consistent harvest.

Bagging Difficulties Overcome

Through their trade organizations, the cooperation of local ice companies was enlisted. In addition, the trade organizations made available all information they had on handling sweet corn and aided in securing shipping bags for the corn.

After some difficulty, bags were secured. They were made of three sheets of 50 pound wet strength Kraft, 20 by 39 inches with a 7 inch bottom, and 3/8 inch vent holes, 6, 12, and 18 inches from the bottom. The holes were for draining off melted ice to prevent saturation of the corn. (In actual use it was found necessary to punch additional holes in the bottom of the bags since they were preferably handled in an upright position.) The bags held 5 dozen ears of fresh corn and 25 pounds of crushed ice and were secured by staples or twisted wire fasteners.

In harvesting the corn, crews began about 5:00 a.m. and usually had the day's pick completed by 9:00 a.m. The corn was gathered in orchard picking bags and transferred to field crates or dumped into a truck in bulk. It was kept in the shade until taken to the processing location.

Hydro cooling of the corn was done in tanks of previously prepared ice water at near 32 degrees Fahrenheit. Ordinary stock watering tanks were filled about 1/3 full and about 450 pounds of crushed ice were thrown in. From 60 to 80 dozen ears of corn were put in each tank and more crushed ice was put on top. Weighted racks were used to force the corn below the water level.

The corn was held in the ice water until cob temperature reached 40 to 45 degrees F. Average time of immersion was 35 minutes, but it was found that this could be reduced to 20 to 25 minutes depending upon field temperature of the corn. With a means of circulating the coolant, this time could be further shortened.

After the corn was sufficiently cooled, it was sacked in the wet strength paper bags. First, $2\frac{1}{2}$ dozen ears were placed in the bag and covered with 10 to 12 pounds of crushed ice, followed by another $2\frac{1}{2}$ dozen topped with a similar amount of ice.

Ice used was a mixture of fine and coarse, to give both the advantage of quick cooling and to hold the coolant over a long period of time. Despite some qualms as to the ability of the bags to stand rough treatment, they stood up well and very few cases of ruptured or damaged bags occurred through the entire project.

Refrigeration Maintained Until Sold

At chain store warehouses, the corn was held in coolers until delivery to retail outlets. At retail stores part of the corn was put on either ice or mechanically refrigerated display and the remainder was held in walk-in coolers. Temperature tests at this point never ran over 55 degrees and usually were under 50 degrees.

An intensive merchandising program was launched to introduce the product as "FIELD FRESH" SWEET CORN. Letters were sent store managers calling their attention to the method of processing the product, the reasons for it, and stressing the improvement in flavor it was designed to bring about. Display cards and mimeograph sheets for customers giving tips on handling the corn to get best results were furnished.

The corn also was tipped in the retail stores, with the result that there was no discoloration of the grains as is found in corn tipped at time of harvest. The appearance, or "eye" appeal was far superior to corn which had routine handling. There was little or no loss from spoilage since the corn was sold out each day before it had a chance to deteriorate to the point where it was unsaleable. Customers asked for more and were disappointed when it was not available.

Costs and Returns

Tables of costs and returns were kept on the corn handled under the project. With NO adjustment for the difference in volume of corn from the two growing areas, the following averages were developed: Total costs, including harvesting and processing labor, bags, ice and hauling, averaged about 18 1/3 cents per dozen or slightly over 91½ cents for a 5 dozen bag. Average sales prices were slightly over 40 cents per dozen or a little over \$2 per 5 dozen bag. Net to growers averaged nearly 22 cents per dozen or a little over \$1.09 per 5 dozen bag.

As often happens in projects of this kind, it was found that costs ran higher than anticipated. This was principally due to the small volume handled which prevented taking advantage of labor- and time-saving techniques and other savings that volume production would allow. However, net returns compared favorably with other crops and most growers felt they were satisfactory for an initial undertaking. Due to unfavorable growing conditions, one of the production areas had a much more unfavorable crop than the other. However, the area with the most favorable crop hit the market at a period of low prices and some of its sales were at \$1.25 per bag as compared with a low of \$2.00 per bag in the other area.

Package-Icing Holds on Long Haul

An outstanding development of the project was one shipment of 50 bags made to a Chicago chain store outlet 360 miles from the area of production. The corn left the producing area at 3:00 p.m. and was delivered to a warehouse cooler at 8:00 a.m. the following morning. Inspection at the cooler, 22 hours after packing, showed a small amount of ice remaining in each bag. The corn looked better than at time of packing, with the shucks green and crisp, and the lowered temperature had been maintained. Atmospheric temperature at the time was extremely high and it was proved without a doubt that long hauls with the method of processing used are practical. The bags stood up well, with one rupture in the 50 and no corn lost from that one. With refrigerated cars or trucks the distance hauled could have been greatly extended. Lack of volume and absence of refrigerated transportation prevented further work along this line.

Some suggestions for improvement of the process follow:

1. Plantings planned for harvest early or late, avoiding the period of about a month, beginning August 1, when a large amount of "home-grown" sweet corn is available on midwestern markets.

2. Use of one of the types of harvesting systems now in operation to cut down labor costs.

3. Separate icing and packaging crews so that corn can be processed as rapidly as possible.

4. Use of a device such as wire baskets for handling corn in the coolant since doing this work by hand is unpleasant even on the hottest days.

5. Use of a large tank with a conveyor regulated to keep the corn in the coolant long enough to bring it to the lowest economical temperature and with some means of circulating the coolant.

6. Cartage costs could be reduced by handling maximum loads, since these costs on the project were exceptionally high--nearly 3 cents per bag.

In planning a similar project, the following points are important:

1. Have an assured outlet able and willing to absorb production from acreage planted.

2. Order paper bags early to insure availability. Ordinary bags in which crushed ice and ice cubes are sold can be used, but they hold only four dozen ears and are only of two thicknesses.

3. Have a firm agreement with growers that only quality corn will be marketed, with official inspection to be the deciding element in case of question.

4. Plan location of processing plant and get it set up early so that ice supply will be available. With a large volume, an icehouse and crusher are desirable.

Further information on this project may be secured by writing:

Division of Markets
Illinois Department of Agriculture
Box 1451
Springfield, Illinois

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SOME RECENT USDA PERSONNEL CHANGES:

Appointment of William W. Chandler as PMA director for the Midwest Area, and Charles L. Frazier as deputy director of the same office has been announced. Mr. Chandler is former deputy director, Midwest Area.

E. H. Spoor, former chairman, California PMA State Committee, has been appointed special field representative at Los Angeles for PMA's Food Distribution Branch to work on food marketing problems in the perishable field.

Dr. E. G. McKibben, formerly in charge of USDA's Tillage Machinery Laboratory at Auburn, Ala., has been appointed director of agricultural engineering research in the Bureau of Plant Industry, Soils, and Agricultural Engineering, Beltsville, Md.

Roy Tipton, former assistant supervisor has been named supervisor of the New York Office of the Commodity Exchange Administration. He succeeds George H. Baston, who retired in January after 34 years service with USDA.

Changes in Milk Production and Use

By Don S. Anderson

Don't expect the dairy industry to stop changing so you can take a leisurely look at just what it is and how it operates. The picture is in motion all the time and certain changes offer problems. During the last decade or so there have been three major developments which must be considered in either measuring progress now or in planning for the future.

These stand-out developments are: (1) The leveling off of milk production in recent years; (2) changes in the utilization of milk and butterfat; and (3) the increasing competition confronting milk and its products from other foods and industrial goods and services.

American farmers produced in 1951 about 40 percent more agricultural commodities as a whole than they produced on the average in the 1935-39 prewar period. They produced only 15 percent more milk, however, and most of the increase occurred before 1942. Milk production has changed little during the last 10 years. Meanwhile U. S. population has continued to increase. Milk production per capita has decreased.

The number of milk cows in the United States has declined 12 percent since 1944. Total milk production has been maintained only by increasing production per cow--the result of herd improvement, higher rates of concentrate feeding, and pasture improvement.

While total U. S. milk production has been relatively stable in recent years, there have been some rather significant regional trends in milk production and utilization. These regional changes have been associated to some extent with the production and consumer demand conditions in the different areas.

Regional Changes in Milk Production

Milk production has held up or moderately increased most generally in those areas where relatively large percentages of the milk produced have been consumed as fluid milk, cream and ice cream, and where the land or other production resources have been more adaptable to dairying than other kinds of farming. In the North and South Atlantic regions milk production has increased moderately, nearly keeping pace with the population growth. Milk cow numbers have remained about constant in those areas but increased production per cow has resulted in some increase in milk production.

Milk production has been about maintained or increased in recent years in several midwestern and South Central States where increased

production per cow has offset or more than offset the decline in number of cows. Milk production has declined somewhat in several midwestern and South Central States that have experienced the largest decline in milk cow numbers, including Minnesota, Iowa, Nebraska and the Dakotas. In general it appears that many farmers have turned from dairying in those areas where the milk has been used principally for manufacture of dairy products and where the returns from other kinds of farming, especially beef production, have appeared more attractive.

Other significant developments in the marketing of milk and its products are the changes in utilization and consumption.

First, more and more farmers in the midwestern and South Central farm-separated cream areas have discarded their separators and delivered whole milk. Twenty years ago nearly half of the milk and its products sold by farmers in the United States was first separated on the farms where the skim milk was fed or wasted and the cream was delivered to creameries. As more facilities for handling and processing whole milk were being established, even before the war, the farmers were shifting to the sale of whole milk. In fact during the 1930's they were shifting faster than a satisfactory market could be developed for the whole milk products, as evidenced by the fact that nonfat dry milk solids went begging at 5 or 6 cents per pound. This shift to whole milk marketing speeded up greatly during the war. In the last few years farm-separated cream has represented only about one-fifth of the U. S. total farm sales of milk and its products.

More Whole Milk Marketed

A significant result of this change is that the market supply of whole milk has increased about 25 percent although the production of milk has changed little. This shift has not changed the total market supply or total consumption of milk fat, since farm sales of butterfat in farm-separated cream and farm butter have decreased. Over 97 percent of the milk fat produced always has been consumed as human food. Human consumption of the nonfat solids of milk, however, has increased in the form of fluid milk, other whole milk products, and skim milk products. In recent years about 70 percent of the nonfat milk solids produced in milk on farms have been consumed as human food, compared with only about half of those produced twenty years ago.

This change has increased whole milk supplies principally in the predominantly manufactured dairy products producing areas. Most of the localities producing milk primarily for fluid milk uses have been almost entirely on a whole milk delivery basis for many years.

There is still about 20 billion pounds of milk being separated on farms for sale as cream. Some of this milk likely will be delivered as whole milk in the future. Much of it, however, is produced on widely scattered farms where the volume apparently does not warrant the establishment of whole milk handling and processing facilities.

Another important major change during the last decade has been the relative increase in consumer demand for fluid milk and certain other dairy products and the contrasting decline in consumer demand for butter. Total consumption of fluid milk, ice cream, cheese, evaporated milk, dry whole milk and nonfat dry milk solids has been substantially greater in recent years than before the war, while butter consumption has declined sharply.

Fluid Milk and Ice Cream Consumption Up

Fluid milk consumption in Federal order markets as a group averaged about $2\frac{1}{2}$ percent greater in 1951 than a year earlier although prices were substantially higher. Ice cream consumption in 1951 was 3 percent greater than a year earlier. Total cheese consumption apparently about held its own but evaporated milk consumption was somewhat less than a year earlier. One of the most encouraging developments in 1951 was in the nonfat dry milk situation. Domestic consumption of this product apparently increased substantially, not only in such established uses as bakery products, but also in retail outlets. Meanwhile, as a result of slightly less milk production and the use of more milk in other channels, production of nonfat dry milk decreased. The 1951 output only moderately exceeded consumption. The Department of Agriculture purchased only about 53 million pounds under the program to support prices to producers for milk and butterfat in 1951, compared with 352 million pounds in 1950.

Butter Consumption Down

The most discouraging part of the demand picture for dairy products of course is the decline in the consumption of butter. This decline has been attributed by different people in different degrees to such factors as the downward trend in consumption of bread and potatoes and in the reduced use of table fats as a group, shift from butter to other spreads, and weak promotional efforts to sell butter to the consumer.

Another important development of recent years confronting the whole dairy industry is the increasing competition, not only from other foods, but also from industrial goods and services in the consumer market. Never before has the consumer been subjected to such high-pressure selling by numerous merchandising methods. Are milk and its products holding their own in this race for the consumer's dollar?

The prospective future supplies of milk and dairy products, the developments in relative demand and consumption, and the outside competition, are all important things to be considered in the promotional programs of industry organizations. Is the dairy industry doing enough in the promotional field? On what products will the promotional dollar bring the greatest return? These are questions to be answered by those experienced in merchandising. It may be noted in this connection, however, that because of the inter-regional and inter-product supply and price relationships, the promotional efforts on one dairy product or in one area tend to filter back throughout the dairy industry and to benefit producers in general.

Is Quality Improvement Necessary?

Another important consideration in the race for the consumer's dollar is that it is easier and less costly to compete when you have high quality products. Great strides have been made in many fluid milk manufacturing milk areas to protect the quality of milk from the time it leaves the cow until it reaches the consumer. These efforts, which incidentally cost relatively little, undoubtedly have been influential even though their effects may not be immediately apparent. Here again industry organizations may well ask themselves whether they are making fast enough progress toward placing only high quality dairy products in the consumer market.

Because of the importance of this quality factor the Department of Agriculture has sought to stimulate further voluntary quality improvement activity in the industry. It has sought the cooperation of agricultural colleges, other State agencies and industry groups in the development of a recommended voluntary quality program, including the development of a uniform set of standards for grading manufacturing milk and cream. It is part of the Department's long-standing voluntary standards, inspection and grading program. This is not a regulatory activity but entirely an effort to assist the industry to voluntarily raise the general quality of dairy products.

High quality milk and its products will be produced and placed on the market only by the dairy industry. These products will be merchandized to the consumer primarily by the dairy industry. The industry cannot rely upon someone else to do this job for it.

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NEW FEDERAL SEED LABORATORY ESTABLISHED

Most of the imported seed entering the United States on the Atlantic coast from now on will be tested for acceptance under the Federal Seed Act at a new Federal laboratory recently established at the New Jersey College of Agriculture, New Brunswick, N. J.

Under the seed act, users are protected by prohibitions against false labeling or advertising of seed moving in interstate commerce and by preventing the importation of seed which is adulterated or unfit for seeding.

Principal activity of the New Brunswick laboratory will be testing seed offered for importation through Atlantic ports south to Norfolk, Va. Last year, more than 50 million pounds of seed were offered for entry through ports which the new laboratory will cover. They were mostly grass and legume seeds for improvement of grasslands.

New equipment is being obtained for the laboratory to permit testing of seed by the most modern methods available. The new facility already is testing seed entering the country through the Port of New York, and by spring will be able to cover other ports south to Norfolk.

In a comparison of current methods and types of equipment used for receiving field boxes of apples at storage houses in the Pacific Northwest area, research workers have learned that costs of certain commonly used methods are less than one-fifth as large as costs of other commonly used methods. Furthermore, these preliminary findings point to the possibility of similar savings in the storage-house receiving operations of other perishable commodities. The research is being conducted by the Washington State Apple Commission under contract with the U.S. Department of Agriculture. Funds were provided under authority of the Research and Marketing Act of 1946.

Handling Costs in Apple Storage

By Joseph F. Herrick

During the 1950-51 apple season, a survey was made of 252 Washington State apple packing and storage houses to determine the types or combinations of types of materials-handling equipment which were in use and the conditions under which they were being used. It was found that field boxes of apples were received and stored at the packing and storage houses in the following ways:

At 120 houses (47 percent), belt conveyors were used in combination with clamp-type two-wheel hand trucks. (The two clamps press against the sides of the bottom box of a stack of boxes.)

At 90 houses (36 percent), clamp-type two-wheel hand trucks alone were used.

At 26 houses, industrial fork-lift trucks and pallets were used.

At 8 houses, clamp-type industrial trucks were used in combination with clamp-type two-wheel hand trucks.

At 4 houses, clamp-type two-wheel hand trucks were used in combination with floor chain conveyors.

At 4 houses, elevators were used in combination with clamp-type two-wheel hand trucks.

After the survey was completed studies were made to determine the comparative labor requirements for performing receiving operations with all types or combinations of types of equipment in use except elevators. Elevator operations are being studied during the current season.

Brief descriptions of the methods of receiving used with each of the five types of equipment under study are as follows:

1. At warehouses in which belt conveyors are used in combination with clamp-type two-wheel hand trucks, field boxes of apples are lifted off the motortruck and placed on a belt conveyor which carries them into the cold-storage room. Inside this room, one or two workers (depending upon the speed of the belt and other factors) remove the boxes from the belt and place them in stacks six boxes high. Other workers, with clamp-type two-wheel hand trucks, clamp onto the stacks and wheel them to the storage point on the warehouse floor. In most warehouses, field boxes of apples are stacked 10 or 12 boxes high. The four to six additional boxes that are stacked above the original six-box-high stack that was set down by the hand truck are placed there by hand, by workers who lift and set boxes there one at a time.

2. In receiving operations in which the clamp-type two-wheel hand truck is used alone or without any auxiliary equipment, the hand truck is wheeled onto the bed of the motor truck. With the hand truck, the workman picks up a six-box-high stack of boxes and wheels them into the warehouse. The stack is placed at the storage point, and four to six additional boxes are placed on top of this stack one at a time by hand.

3. The floor chain conveyor consists of a pair of link chains which run in parallel channels countersunk in the floor. The two chains travel at the same speed and can pull boxes and stacks of boxes along the floor. A solenoid switch at the unloading end cuts off the power and stops the chains when a stack of boxes reaches that point. This arrangement prevents other stacks that are moving over the same course from bumping into the stack, that has reached the end, and toppling it over. The floor chain conveyor is usually, if not always, used in combination with the clamp-type two-wheel hand truck. The hand truck is used to unload the boxes from the motortruck in stacks of six and to transport them to the chain conveyor. After the stacks have been moved by the chain conveyor to the end of its course, at a speed of 20 feet a minute, hand trucks are again used to move the stacks the balance of the distance to the storage position.

4. The industrial clamp-type truck picks up and carries its load by squeezing and gripping the outside of the stacks. For this reason pallets are not needed as is the case when a fork-lift truck is used. When this type of equipment is used, clamp-type two-wheel hand trucks are used to unload the field boxes from the motor truck and set them on the receiving dock of the storage house. Then the industrial truck with clamp attachments picks up 24 or 36 boxes per load, transports them into the house and sets them down at the storage point.

5. When industrial fork-lift trucks and pallets are used for receiving field boxes of apples, the unit loads of boxes of apples are placed on pallets at the orchard. When the motortrucks carrying these loaded pallets reach the storage house, fork-lift trucks are used to lift the loaded pallets, carry them to the storage room, and stack them. One of the advantages of this method is that boxes are not handled individually during the receiving operations. Entire pallet loads consisting of 36 or 48 boxes are moved as units all the way through the storage-house receiving operations. This procedure not only reduces the labor but

also is less damaging to the fruit. However, it should be remembered that the loading of pallets in the orchard may increase the labor required at that point. (Data on the comparative costs of loading orchard trucks and trailers by various methods were gathered during the past season but analyses have not been completed.)

Comparison of Methods and Equipment Used For Receiving Apples

Time studies were made of the various methods and types of equipment used in receiving operations. Preliminary indications of these studies are that there is a considerable variation in the costs of the various methods of receiving. Comparative costs for receiving 1,000 field boxes of apples at storage houses with five specified methods and types of equipment were as follows:

	<u>Labor</u>	<u>Cost of Machines</u>	<u>Total</u>
Belt conveyor and clamp-type two-wheel hand truck	\$8.66	\$0.92	\$9.58
Clamp-type two-wheel hand truck	6.70	.05	6.75
Floor chain conveyor and clamp-type two-wheel hand truck	6.31	1.18	7.49
Industrial clamp-truck and clamp-type two-wheel hand truck			
24 boxes per load	3.18	1.99	5.17
36 boxes per load	2.46	1.12	3.58
Pallets and fork-lift truck			
36 boxes per pallet	1.08	1.10	2.18
48 boxes per pallet	.82	1.11	1.93

(Transportation distances with all five methods were adjusted to 100 feet.)

These costs were computed on the basis of assumed wage rates of \$1.25 per hour for common labor and \$1.50 per hour for semi-skilled labor (industrial truck operators). Per hour equipment costs used in these computations include both the costs of ownership and operation. Ownership costs are based on typical annual hours of use per item of equipment in apple packing and storage houses. The combined costs per hour for the types of equipment used are: (1) Belt conveyor, \$0.71; (2) clamp-type two wheel hand truck, \$0.05; (3) floor chain conveyor, \$0.95; (4) industrial clamp-type truck (2,000-pound capacity), \$1.80; (5) industrial fork-lift truck (2,000-pound capacity), \$1.53; and (6) industrial fork-lift (4,000-pound capacity), \$2.01.

The results indicate that methods which involve the handling of individual boxes of apples require a considerably larger number man-hours than the methods which make use of the unit-load principle. Where existing facilities are suitable or can be remodeled at a reasonable cost

the industrial truck--both the forklift and the clamp type--offers real possibilities for reducing the costs of these receiving operations.

A method of receiving that decreases the peak demand for labor is desirable for the handling of any perishable crop, such as apples, when the normal harvest season lasts only a few weeks. The industrial truck offers possibilities of reducing the competition for labor. Moreover, there is some indication that managerial problems in the plant are simplified when industrial trucks are used, since large work crews are not needed and there is no need to employ standby help.

The handling of apples with industrial equipment causes less damage to fruit than other types of equipment, because the fruit is handled fewer times. Another advantage of this type of equipment is that the motortrucks bringing fruit from the orchard are tied up for shorter periods while they unload at the storage house, and can make more round trips per day.

There are or may be disadvantages in the use of industrial clamp trucks and fork trucks. Purchase and operation costs of the larger equipment must be taken into account. The particular storage house must have a large enough volume of business to justify equipment capable of handling the larger loads.

The particular warehouse must be such that industrial trucks can be used in it without major and too costly alterations. For example, a warehouse might have a satisfactory layout and proper ceiling heights, but a floor that would not support loaded industrial type trucks without major remodeling. Relatively low ceilings could mean that the advantages of the fork-lift truck over some of the other types of equipment might be considerably reduced. The relatively wide aisles necessary for efficient use of industrial trucks might reduce too much the net storage or piling space. Door widths and heights must be adequate to permit free movement of equipment, and platforms should be of the right height and have sufficient floor area.

Plant operators who are considering the adoption of types of receiving equipment that differ from those they are now using may obtain more details and further information from the Research Department, Washington State Apple Commission, Yakima, Wash., or the Marketing and Facilities Research Branch, Production and Marketing Administration, U. S. Department of Agriculture, Washington 25, D. C.

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OPS Issues Regulations on Paper Shipping Sacks and Paperboard

CPR 115, a tailored regulation issued by OPS for the paper shipping sack industry, freezes prices at levels established by the General Ceiling Price Regulation, except for minor increases on products made from 40-pound kraft shipping sack paper. CPR 116, a similar regulation for the food container and closure paperboard industry, establishes manufacturer ceilings at current market levels, based upon prices in effect during the 45-day period ending January 11, 1952.

Defense Notes

Wilson Pledges Aid in High-Level Farm Output.--Warm support for the farm defense production effort came from Charles E. Wilson, Director of Defense Mobilization, in a recent address in Chicago at the National Council of Farmer Cooperatives.

Director Wilson declared: "We regard agriculture as an integral part of our defense preparedness....We have gotten a liberal education with regard to the need of more and more fertilizer, and of more and more farm machinery. Yes, and we're sold on it....On the whole, everything that is humanly possible will be done to keep farm production at a high level."

He also urged his audience, "as representatives of the farmers of America, to use restraint in your attitude toward prices, just as I have urged restraint on labor, industry and other groups. It is the worst kind of fallacious thinking," Wilson reiterated, "to suppose that ANY GROUP can permanently profit from runaway inflation, which I regard as Domestic Enemy No. 1."

A Look at Controlled Materials

Allotments of Controlled Materials.--Steel, copper, and aluminum for the second quarter of 1952 have been made by the Defense Production Administration. Of interest are those allotments to the U. S. Department of Agriculture for agricultural and related industry construction and to industry divisions of the National Production Administration for manufacture of farm machinery and equipment and containers.

The Department, acting as claimant for construction materials in the food and fiber processing industries, wholesale food trade, and on-farm construction, was granted smaller amounts of the three metals than allotted during the first quarter. The Department's steel allotment comes to 52,105 tons compared with 58,000 tons for the first quarter. The total of copper and copper base alloys granted totals 1,376,000 pounds compared with 2,140,000 pounds for the January-March period. The aluminum allotment of 87,000 pounds compared with a 100,000-pound allotment for the earlier three months. Concerning the USDA allotment, DPA pointed out that "only projects needed for the maintenance of existing capacity were approved."

Agricultural machinery and implement allotments were higher than the current quarter for all three metals. The allotment for steel was 508,040 tons compared with 502,163 before; 9,272,000 pounds of copper compared with 7,786,000; and 7,429,000 pounds of aluminum compared with 6,631,000 pounds for first quarter 1952.

Allotments for containers and packaging are at lower levels for the second quarter. New allotments come to 1,516,000 tons of steel, 288,000 pounds of copper, and 19,561,000 pounds of aluminum. The present quarter's allotment was 1,672,000 tons of steel, 318,000 pounds of copper, and 21,556,000 pounds of aluminum.

Best Bet for More Production

Fertilizer Prospects Ease a Little.--Department officials responsible for agricultural materials and facilities have just revised their estimates of the overall fertilizer supplies farmers can count on in 1952--and the picture is a slightly improved one. Instead of a 5 percent boost in nitrogen supplies this year, the outlook now is for a 6 to 7 percent increase. With the increasing demand for nitrogen, however--supplies will still be short of needs.

Instead of an anticipated 8-10 percent decrease in phosphate supplies, only a 6 percent drop for the year is now expected. The phosphate outlook thus remains short although a trifle improved. The estimated 5 percent increase in potash still stands--and potash supplies are expected to be more nearly adequate. Overall this year, farmers will not get all the fertilizer they need. Their best assurance is buying early.

Use It Where it Counts

USDA Urges Farmers to Apply More Nitrogen to Corn.--An increase in the proportion of nitrogen to phosphate in fertilizers applied to corn, plus a side dressing of ammonium sulfate (straight nitrogen fertilizer), can lead to a significant increase in yield per acre of corn, according to a statement prepared by Department officials for use in connection with the 1952 goals program. On the average, farmers do not apply to corn as much nitrogen in relation to phosphates as they should, the statement declares.

The following is given as a typical example. A farmer uses 200 pounds of 3-12-12 fertilizer (nitrogen--phosphate--potash) per acre on 50 acres of corn. His yield is 41 bushels to the acre or 2,050 bushels, which at \$1.60 per bushel is worth \$3,280. If he used instead 200 pounds of 6-12-12 per acre costing an additional \$50, plus a side dressing of 60 pounds of ammonium sulfate--or its equivalent in other nitrogen materials costing perhaps \$90--his yield could reasonably be expected to be 50 bushels to the acre or 2,500 bushels of corn worth \$4,000. For an expenditure of \$140, he would receive a return of something like \$720. Yield responses of corn to nitrogen applications vary, of course, with variations in soil and growing conditions, and likewise prices of fertilizers vary throughout the country, the statement cautions.

A suggestion was made by a Department spokesman that since ammonium sulfate is in freer supply than superphosphates, the former material could be used to raise the nitrogen ratios of mixed fertilizers, particularly for application on grains. Higher nitrogen content in mixed fertilizers for grains was urged.

New Goal Announced for Sulfur Output.--DPA has announced a goal for the annual production of sulfur and sulfur equivalents in 1955 which is considerably higher than the output which could be expected on the basis of existing operations and the present Government stimulation program. The goal of 8,400,000 long tons is also 2,320,000 tons or 38 percent over 1950 production.

Fertilizer Industry Spokesmen Request USDA Survey of Storage Facilities.--At the meeting of USDA's Fertilizer Industry Advisory Committee on January 18, industry spokesmen requested the Department to make a survey of fertilizer storage facilities from manufacturers right on through to farmers. Also requested was a determination by crops and localities of the best fertilizer formulas.

Machinery and Supplies

Distributors of Farm Machinery Repair Parts Ask Priority Assistance.--Independent distributors of repair parts for farm machinery and implements want priority assistance similar to that accorded to producers of farm machinery and implements. This came out at the recent meeting with the NPA of the Farm Production Tool and Small Equipment Distribution Industry Advisory Committee. Although both producers and independent distributors get equal status on paper, the Committee says it doesn't work out in practice. The result has been supply problems concerning general components of repair parts, but the Committee did report that the supply and distribution of specifically-designed parts are relatively satisfactory.

Ceilings Raised on Leases of Can Closing Machinery and Equipment.--Lessors of can closing machinery and equipment are authorized to increase their ceiling prices to the level of prices authorized for the American Can Company and the Continental Can Company. The authorization is covered by CPR 114, effective January 16. The American Can Company and the Continental Can Company were authorized by Supplementary Regulation 22 to GCPR to increase ceiling prices for leasing can closing machines so as to conform with judgments by Federal Court decisions. Unless other lessors also are permitted to adjust their rental rates to those of these two companies, the Court's order will not be completely effective, according to OPS.

More Cans Permitted for Some Low-cost Foods.--An amendment to NPA order M-25 permits an increase in the quantity of cans that may be used to pack spaghetti and macaroni, chili with beans, non-seasonal soups, and dried soaked beans. The Department of Agriculture recommended the action, effective January 22, which raises the quota of cans that may be used for these products from 90 to 100 percent of base period use.

Supply of Bags for Dry Commodities Good.--The overall supply of paper bags, burlap and cotton shipping sacks, and synthetic consumer bags for packaging such dry food products as peas and beans is generally favorable, according to information compiled by PMA early in February. The consumer-type paper bag is freer in supply than the multi-wall shipping sack made of paper, but all types of paper bags can be obtained on a 4-

weeks delivery schedule. Burlap is in good supply and there are "abnormal stocks" of cotton shipping sacks. Of the synthetics, pliofilm is in considerably better supply than cellophane and polyethylene. Ninety per cent of pliofilm output will be available for food packaging.

Frozen Food Containers.--At a recent meeting with NPA the Rigid Plastic Frozen Food Container Industry Advisory Committee suggested that NPA directly allocate polyethylene to the industry. NPA replied that prospects of obtaining increased supplies of polyethylene would be greater through the free area of distribution.

Farm Manpower Studied

Special Review of State Manpower Problems to be Made.--To serve as a guide in its farm placement program this year, the United States Employment Service has asked USDA for its cooperation and assistance in making pre-season surveys of the farm manpower situation. As a means of cooperating as fully as possible with this request, Under Secretary Clarence J. McCormick has addressed a memorandum to State Agricultural Mobilization Committees asking for an appraisal of the agricultural manpower situation in each State, based upon 1951 experience and any recent developments. Specifically requested is information on actions taken to counteract losses to non-farm employment and the armed services. Also requested is the opinion of the AM committees on the possible effect of manpower shortages on the meeting of the 1952 production goals.

OPS Price Actions

White Potato Price Regulation Revised; Retail Ceilings Set.--A revision to the White Potato Regulation CPR 113 has been issued by OPS effective as of January 21. The revision includes seasonal price adjustments through June on prices at country shipping points. The original order included such adjustments from February through May. Added also is a break-down of distributive margins between shipping point and retail store, and there are some revisions in grade, size and packaging differentials outlined in the original order.

Ceiling price markups for retail sales of white potatoes were announced January 23. The action, contained in CPR 15, amendment 10, and CPR 16, amendment 10, assures consumers the benefit of stabilized prices provided by Ceiling Price Regulation 113, issued January 5, which placed dollar-and-cent ceilings on sales at country shipping points, according to OPS. Specified percentage markups will be used by retailers to determine ceiling prices for sales to customers. The ceiling price will be "net cost" plus the markup.

Higher Ceiling Prices Placed on Corn Gluten Feed.--OPS has established specific dollars-and-cents ceiling prices at the processor and distributor levels for feed by-products of the wet corn milling industry. These replace exceptionally low ceilings set last January when prices were frozen under the General Ceiling Price Regulation. They also bring the ceilings of these corn by-product feeds in line with the cost of corn. The new ceilings are estimated to be 15 to 20 percent over GCPR ceilings.

(The Production and Marketing Administration announcements summarized below are more completely covered in press releases that may be obtained on request from the Office of Information, U. S. Department of Agriculture, Washington 25, D. C. by citing the code number given at the end of each item.)

Cotton.--Effective March 21, 1952, Fresno, Calif., will be designated as a bona fide cotton spot market under the Cotton Futures Act, as amended. It is the first market in the far western cotton producing states to receive this recognition. (USDA 355-52)... The yellow striped armyworm, which in 1951 caused extensive damage to cotton plants in Southern States, was controlled effectively last summer in Mississippi in preliminary field experiments, with EPN, one of the newer organic phosphate insecticides. USDA entomologists found several effective insecticides among the 11 that they tested against the pest in these experiments, but EPN proved by far the best, at both a low and a high rate of application. This new insecticide, although in use experimentally, probably will not be available on the market in 1952. (USDA 334-52)... Commodity Credit Corporation has sold 194,728 pounds of 1951-crop kenaf fiber under offers accepted February 1. This was all the fiber harvested from the 1951 crop of kenaf grown in Florida under CCC contracts to encourage domestic production of a substitute for jute. (USDA 268-52)

Dairy Products.--Proposed revisions of instructions for dairy plants operating under voluntary Department supervision and inspection in connection with the manufacture of dairy products have been issued by USDA. Included in the proposed revisions are: (1) revised manufacturing milk and cream grades, (2) revised minimum requirements for acceptable raw materials, (3) grade identification of the manufactured products, and (4) slight revisions of the minimum standards and specifications for facilities and operations. Interested parties have until April 8, 1952 to submit views and comments. (USDA 258-52)... USDA has announced a proposal to discontinue the use of "Cooking Grade" in its standards for grades of butter, and to make slight revisions in U. S. Grade AA, U. S. Grade A, U. S. Grade B, and U. S. Grade C. The standards are based on flavor, body, color, and salt. Interested parties have until March 9, 1952 to submit views and comments. (USDA 259-52)... Time for filing comments on the proposed San Antonio Federal milk marketing order has been extended through February 25. USDA has recommended an order for the area and the original time for filing comments would have expired on February 15 (USDA 327-52)... A decrease in the current minimum Class II (manufacturing) milk price under the Detroit Federal milk marketing order would result from a revision in the order's pricing formula given final approval by USDA. Before the change can be put into effect, it must be approved by the producers or producer groups in the Detroit marketing area. (USDA 299-52)... USDA has announced that its decision against the adoption of a "supply-demand" pricing arrangement proposed by Knoxville, Tenn., milk producers for the Federal milk order in the area will stand. No exceptions were filed to the negative USDA recommendation on this proposal announced

on November 27. (USDA 266-52)... Cheese and casein import quotas have been established by USDA for the period August 9, 1951 through June 30, 1952, as required under the mandatory provisions of Section 104 of the Defense Production Act, as amended. The total amount authorized, 39,294,-000 pounds, compares with 57,106,000 pounds imported in the period August 1950--June 1951. (USDA 247-52)

Fats and Oils.--An increase of 32,639 acres in acreage allotments for States producing Virginia and Valencia types of peanuts in 1952 has been announced by USDA. The action is in compliance with Sec. 358(c) (2) of the Agricultural Adjustment Act of 1938, as amended, which authorizes the Department to increase the allotments for States which produce a type of peanuts in quantities insufficient to meet demands for cleaning and shelling purposes at prices at which CCC may sell peanuts owned by the corporation for cleaning and shelling. (USDA 196-52)

Fruits and Vegetables.--An export payment program to encourage exports of fresh and processed lemons during the current marketing season became effective on January 28, 1952. The program provides for payments up to 40 percent of the export sales price, basis f.a.s. United States ports, to be limited by the maximum rates established for individual products, and is similar to a recent export program on lemons which terminated on November 30, 1951. (USDA 134-52)... Proposed U. S. Standards for raspberries for processing, have been announced by USDA. They are new standards developed at the request of growers, processors, and State marketing officials, particularly in New York and Michigan. The proposed standards, were published January 25 in the Federal Register. Interested parties may, until February 25, submit views or comments. (USDA 149-52) ... Public hearings on citrus marketing order regulations were held at Lakeland and Orlando, Fla., during February, 1952. The hearings were held in response to a petition of the Florida Independent Citrus Growers Association that grade and size regulations under the marketing agreement and order program regulating Florida citrus fruit shipments be suspended for the remainder of the marketing season. (USDA 243-52)... USDA has purchased 181,825 cases of twelve No. 3 cylinder cans of concentrated orange juice (3 to 1 ratio) for distribution to school lunch programs and other eligible outlets. The purchase, made in Florida, is equivalent to 784,120 gallons. (USDA 267-52)... At the request of the Industry Committee functioning under the amended marketing agreement and order regulating the handling of Tokay grapes grown in California, a public hearing on proposed amendments will be held in Lodi, Calif., on March 13, 1952. The amendments proposed by the Industry Committee would: (1) redefine the area of production to comprise San Joaquin and Sacramento counties instead of the entire State of California; (2) provide for grade and size regulations on intrastate shipments; (3) revise the method of selecting the members and alternate members of the Shippers' Advisory Committee; (4) revise the provisions with respect to the granting of exemptions to growers; and (5) provide for other minor changes in the marketing agreement and order. (USDA 332-52)... Termination of proceedings on proposed amendments to the marketing agreement and order regulating the handling of hops and hop products produced in Oregon, California, Washington, and Idaho, has been announced by USDA. Action was taken at the request of the Hop Control Board and because of changed economic and marketing conditions in the hop industry since the hearing. (USDA 172-52)

... USDA has completed purchases of pecans under a program announced last November. The total purchased was 3,330,000 pounds at an average price of about 71.2 cents a pound. (USDA 202-52)

Grain.--USDA has announced that 1952-crop corn will be price-supported at not less than a national average of \$1.60 a bushel, rice at not less than \$5.04 per hundredweight, and soybeans at \$2.56 a bushel. Dollars and cents supports were announced in advance of spring planting in accordance with forward pricing provisions of the Agricultural Act of 1949. (USDA 301-52)... An efficient, heated-air drier that will dry as much as 50 bushels of high-moisture grain or shelled corn an hour can be built on the farm from USDA plans just published in Leaflet No. 314, "Inclined-Column Grain Drier." The drier was developed through the cooperative research of agricultural engineers of the USDA and the Illinois Agricultural Experiment Station, primarily for the use of farmers who need a unit that can rapidly process large quantities of wet grain or shelled corn for market or storage. A free copy of Leaflet No. 314 may be obtained from the Office of Information, U. S. Department of Agriculture, Washington 25, D. C. Additional information on drying units, field picker-shellers, fans and elevators may be obtained from county extension agents, the agricultural engineering department at State colleges, or the division of farm buildings, Agricultural Research Center, Beltsville, Md. (USDA 252-52)... Wheat and flour exports were far above exports of other grains and grain products, during the last six months of 1951. Totals for the last half of the year showed exports of wheat, flour, and macaroni at 212,936,000 equivalent bushels, as contrasted with only 83,038,000 bushels of other grains and grain products. During the like period of 1950 the exports of wheat, flour, and macaroni totaled 111,221,000 bushels, as contrasted with 109,464,000 bushels of other grains. "Other grains" include corn, oats, grain sorghums, barley, rye, corn grits, hominy and meal, corn starch and flour, oat meal and malt. (USDA 181-52)... Farmers put more wheat and flaxseed, but less corn and other grains under price support during July-December 1951 than during the like period of 1950, according to USDA. The total for all grains and related commodities was 256,506,293 bushels during the last half of 1951, as compared with approximately 307,000,000 bushels during the last half of 1950. (USDA 183-52)... Development of a new variety of soybeans to be called Perry has been announced by USDA and cooperating State agricultural experiment stations in Indiana, Illinois, Missouri, and Kansas. High-yielding and high in oil content, Perry is adapted as a full-season variety in southern Indiana, southern Illinois, central and southern Missouri, and in eastern Kansas, an area south of a line extending east from about Abilene, Kans., through Manhattan, following the Kaw River Valley, and then eastward slightly north of Columbia, Mo., Edgewood, Ill., and Vincennes, Ind. (USDA 338-52)

Sugar.--A way to develop strains of sugar beets more resistant to wasteful storage rots has been demonstrated by scientists of the U. S. Department of Agriculture and the Colorado Agricultural Experiment Station. (USDA 276-52)

Tobacco.--A price support loan schedule for 1951-crop sorted Connecticut Broadleaf, Type 51, tobacco has been announced. (USDA 231-52)

ABOUT MARKETING

The following addresses and publications, issued recently, may be obtained upon request. To order, check on this page the publications desired, detach and mail to the Production and Marketing Administration, U. S. Department of Agriculture, Washington 25, D. C.

Addresses:

Agriculture's Production Job for 1952, summary of remarks of Administrator Gus F. Geisler at New Jersey Farmers Week, Trenton, N. J., Jan. 30, 1952.

Price Supports in Our Defense Economy, summary of remarks of Elmer F. Kruse, Assistant Administrator, PMA, at annual meeting of Iowa State PMA Committee, Des Moines, Ia., Jan. 16, 1952.

Publications:

1952 Production Goals Handbook. January 1952. 129 pp. (PMA) (Processed)

The 5th Plate. PA-191. December 1951. 42 pp. (PMA) (Processed)

Wholesale Prices of Fresh Fruits and Vegetables and Auction Prices of Fresh Fruits at New York City and Chicago and F.O.B. Prices at Leading Shipping Points, By Months, 1950. November 1951. 45 pp. (PMA) (Processed)

Report of the Administrator of the Production and Marketing Administration 1951. 114 pp. (Printed)

United States Standards for Grades of Refiners' Sirup. (Reprinted from Federal Register of January 5, 1952.) 2 pp. GPO-PMA 172.

Annual Report on Tobacco Statistics 1951. December 1951. Statistical Bulletin No. 103. (PMA) (Processed)

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